

Structural Characterization of Archaeal Elongation Factors

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Elongation factors (EF) are enzymes that play a major role in protein biosynthesis. However, limited structural information is available on elongation factors isolated from archaea/eukarya [1,2]. We have undertaken structural studies on elongation factors isolated from the hyperthermophilic archaeon *Sulfolobus solfataricus*. The interest for these proteins is twofold. Indeed, they represent a valuable system to investigate structure/function relationships in archaeal/eukaryal elongation factors and to study structure/stability correlations. Our previous investigations have provided insight into the function of SsEF-1 α and into the role played by the magnesium in the nucleotide exchange process. Our data also provided a preliminary mechanism for the exchange process in EF-1 α . In order to better define this mechanism, we are currently performing structural investigations on the exchange factor SsEF-1 β . Native and MAD data have been collected and the solution of the structure is in progress. Furthermore, the complex between SsEF-1 α and SsEF-1 β has been prepared for crystallographic investigations. Finally, a combined analysis by CD spectroscopy and molecular modeling has contributed to highlight the structural determinants of SsEF-1 α thermostability.

[1] Vitagliano L., Masullo M., Sica F., Zagari A., Bocchini V., *Embo. J.*, 2001, **20**, 5305. [2] Vitagliano L., Ruggiero A., Masullo M., Cantiello P., Arcari P., Zagari A., *Biochemistry*, 2004, **43**, 6630.

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